

CLAIMS

What is claimed is:

1. A method, comprising individually spread-spectrum modulating at least two of a set of orthogonal frequency division multiplexed carriers, wherein the resulting individually spread-spectrum modulated at least two of a set of orthogonal frequency division multiplexed carriers are substantially mutually orthogonal with respect to both frequency division multiplexing and spread-spectrum modulation.
2. The method of claim 1, further comprising individually spread-spectrum modulating at least two of another set of orthogonal frequency division multiplexed carriers, wherein the resulting individually spread-spectrum modulated at least two of the another set of orthogonal frequency division multiplexed carriers are substantially mutually orthogonal with respect to both frequency division multiplexing and spread-spectrum modulation.
3. The method of claim 1, wherein spread-spectrum modulating includes direct-sequence spreading using a pseudorandom maximal linear sequence.
4. The method of claim 1, wherein spread-spectrum modulating includes direct-sequence spreading using at least one code selected from the group consisting of a Gold code derived from combinations of a plurality of maximal linear sequence polynomials and a Kasami code derived from combinations of a plurality of maximal linear sequence polynomials.
5. The method of claim 1, wherein spread-spectrum modulating includes direct-sequence spreading using a fully orthogonal Walsh polynomial code set.
6. The method of claim 1, wherein frequency division adjacent individually spread-spectrum modulated orthogonal frequency division multiplexed carriers are spread-spectrum modulated by at least one member selected from the group consisting of mutually orthogonal Fourier codes and mutually orthogonal wavelet codes.

7. The method of claim 1, further comprising modulating at least one of the individually spread-spectrum modulated orthogonal frequency division multiplexed carriers using at least one modulation technique selected from the group consisting of BPSK, QPSK, OQPSK, MSK, and n-QAM.

8. The method of claim 1, further comprising spread-spectrum demodulating at least two of the set of individually spread-spectrum modulated orthogonal frequency division multiplexed carriers.

9. The method of claim 8, further comprising orthogonal frequency division demultiplexing the demodulated individually spread-spectrum modulated orthogonal frequency division multiplexed carriers.

10. A computer program, comprising computer or machine readable program elements translatable for implementing the method of claim 1.

11. An electronic media, comprising a program for performing the method of claim 1.

12. A method comprising: individually spread-spectrum demodulating at least two of a set of individually spread-spectrum modulated orthogonal frequency division multiplexed carriers that are substantially mutually orthogonal with respect to both frequency division multiplexing and spread-spectrum modulation.

13. The method of claim 12, further comprising individually spread-spectrum demodulating at least two of another set of individually spread-spectrum modulated orthogonal frequency division multiplexed carriers that are substantially mutually orthogonal with respect to both frequency division multiplexing and spread-spectrum modulation.

14. The method of claim 12, wherein spread-spectrum demodulating includes direct-sequence despreading using a pseudorandom maximal linear sequence.

15. The method of claim 12, wherein spread-spectrum demodulating includes direct-sequence despread using at least one code selected from the group consisting of a Gold code derived from combinations of a plurality of maximal linear sequence polynomials and a Kasami code derived from combinations of a plurality of maximal linear sequence polynomials.
16. The method of claim 12, wherein spread-spectrum demodulating includes direct-sequence despread using a fully orthogonal Walsh polynomial code set.
17. The method of claim 12, wherein frequency division adjacent individually spread-spectrum modulated orthogonal frequency division multiplexed carriers are spread-spectrum demodulated by at least one member selected from the group consisting of mutually orthogonal Fourier codes and mutually orthogonal wavelet codes.
18. The method of claim 12, further comprising demodulating at least one of the individually spread-spectrum modulated orthogonal frequency division multiplexed carriers using at least one modulation technique selected from the group consisting of BPSK, QPSK, OQPSK, MSK, and n-QAM.
19. The method of claim 12, further comprising orthogonal frequency division demultiplexing the demodulated individually spread-spectrum modulated orthogonal frequency division multiplexed carriers.
20. A computer program, comprising computer or machine readable program elements translatable for implementing the method of claim 12.
21. An electronic media, comprising a program for performing the method of claim 12.
22. An apparatus, comprising: a plurality of orthogonal frequency division multiplex generators; a plurality of data modulators, each of the plurality of data modulators coupled to one of the plurality of orthogonal frequency division multiplex generators; and a linear summer coupled to the plurality of data modulators.

23. The apparatus of claim 22, further comprising a radio-frequency power amplifier coupled to the linear summer and an antenna coupled to the radio-frequency power amplifier.
24. An integrated circuit, comprising the apparatus of claim 22.
25. A circuit board, comprising the integrated circuit of claim 24.
26. A transmitter, comprising the circuit board of claim 25.
27. An apparatus, comprising a plurality of demodulator/despreader circuits; and a plurality of low-pass filters, each of the plurality of low-pass filters coupled to one of the plurality of demodulator/despreader circuits.
28. The apparatus of claim 27, wherein each of the demodulator/despreader circuits and the associated low-pass filters composes a digital signal processor.
29. The apparatus of claim 28, further comprising an analog-to-digital converter coupled to the digital signal processor.
30. The apparatus of claim 27, further comprising an intermediate-frequency amplifier chain coupled to the plurality of demodulator/despreader circuits; an intermediate-frequency bandpass filter coupled to the intermediate-frequency amplifier chain; a radio-frequency downconverter coupled to the intermediate-frequency bandpass filter; a low-noise radio-frequency amplifier coupled to the radio-frequency downconverter; and an antenna coupled to the low-noise radio-frequency amplifier.
31. An integrated circuit, comprising the apparatus of claim 27.
32. A circuit board, comprising the integrated circuit of claim 31.

33. A receiver, comprising the circuit board of claim 32.